MAGNETIC OBSERVATIONS DURING THE RECENT DECLINING PHASE OF SOLAR ACTIVITY

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After an extremely rapid rise, solar activity peaked in July 1989 and was followed by reversals of the Sun's polar cap magnetic fields in 1990. The following gradual decline in activity was interrupted by a strong resurgence in May-June 1991 that is reminiscent of similar outbursts in August 1972 and July 1982. The anticipated series of corotating very high speed streams commenced in December 1992. Fortunately, during this interval, a network of spacecraft has been making observations at various locations in the heliosphere. At 1 AU, observations are available from IMP-8 and ICE. Ulysses was traveling from 1 to 5,2 AU and then returning toward 1 AU while progressing southward toward the Sun's polar cap. Pioneer 10, 11 and Voyager 1,2 were acquiring information on the state of the outer heliosphere between 35 and 50 AU. The Ulysses observations are of special interest because they were obtained continuously, a capability made possible by use of an on-board tape recorder, and because, the complement of instruments has been able to distinguish coronal mass ejections (CMEs) and magnetic clouds from corotating streams and interaction regions, Studies of the sector structure and heliospheric current sheet using the multi-spacecraft data have been complemented by the continuous set of source surface contour plots provided by the Stanford University Wilcox Solar Observatory. Among the many events of interest has been an abrupt shift in the sector structure in June 1992 and the decreasing inclination of the current sheet which descended to below the latitude of Ulysses in June 1993,

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D. 1.1 The Heliosphere during the Declining Solar Cycle
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Oral presentation